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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,472	12/04/2003	Jacques Thebault	BDL-438XX	6264
207	7590	08/24/2005	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP			XU, LING X	
TEN POST OFFICE SQUARE			ART UNIT	
BOSTON, MA 02109			PAPER NUMBER	

1775

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/727,472

Applicant(s)

THEBAULT ET AL.

Examiner

Ling X. Xu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 4/12/04, 3/7/05.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-10 and 21-22, drawn to a product, classified in class 428, subclass 304.4.
 - II. Claims 11-20 and 23, drawn to a method of making the product, classified in class 264, subclass 628.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by another and materially different process such as process involving pyrolysis of a preform from a structure having an organic matrix with a fibrous reinforcement and silicidation of the carbon of the perform so as to obtain a microporous SiC core.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Charles Gagnebin III on 8/11/2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10 and 21-22. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 11-20 and 23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

2. The disclosure is objected to because of the followings

The specification states, on page 5 line 24, that bulk density of the structure is less than 1. However, on page 24, line 19, it states that the structure has a density of 8 kg/m^2 . It is also unclear if the bulk density of the structure is less than 1 kg/m^3 Please clarify.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 and 21-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for density gradient through the thickness, see page 5 of the specification, does not reasonably provide enablement for any compositional gradient. The

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specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 and 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, as stated in the specification on page 7, the preform of the porous core of the thermostructural having pore volume content of greater than or equal to 80%. The intermediate layer containing the ceramic precursor polymer and a refractory solid filler is applied to all the accessible surfaces of the preform and conversion of the precursor polymer into a ceramic in order to reduce the porosity at the surface of the preform. Accordingly, the finished product of the porous core does not have the same porosity as the preform and the intermediate layers in the finished product should be converted to the ceramic. The following examination is based on that the claimed thermostructural composite is the finished product and the porous core does not have the same porosity as the preform and the intermediate layer comprising finished ceramic.

In addition, in line 5 of claim 1, it is unclear if the intermediate layers comprising part of the refractory is referred to part of the refractory of porous core.

In claim 4, it is unclear if the intermediate layers and porous core are in separate location as the ceramic shells and the intermediate layers. It is also unclear how the structure is partly

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interpenetrate so as to anchor the intermediate layers in the porous core and the ceramic shells in the intermediate layers. Similar indefinite language is also found in claim 21.

In claim 6, there is insufficient antecedent basis for the limitation of “the walls” in the claim. It is unclear what the locations of the walls and cavities are in the structure. Similar indefinite language is also found in claim 21.

In claim 9, it is unclear if the “at least one optical surface” is part of the stiffeners or a separate layer. Similar indefinite language is also found in claim 22.

In claim 10, there is insufficient antecedent basis for the limitation of “the ceramic” in the claim. Similar indefinite language is also found in claim 21.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9-10 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Chenier et al (US 6,187,123).

With respect to claims 1-4, Chenier discloses a lightened mirror structure comprising microporous SiC core (col. 2, lines 55-67) having two intermediate skin layers and at least one finishing coatings on skin layers (abstract and col. 8, lines 20-25). The porous SiC core comprises a refractory fiber reinforcement consolidated by a matrix including carbon fibers of the ex-rayon type bonded together by a carbon matrix (col. 7; lines 45-55). The intermediate

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layers are formed on each of the faces of the core and bonding the surface of the core to reduce porosity on the surface (density gradient) (col. 3, lines 1-25). The intermediate layers comprise SiC, which is a ceramic.

With respect to claim 5, as stated in the specification on page 7, the preform of the porous core of the thermostructural having pore volume content of greater than or equal to 80%. The intermediate layer containing the ceramic precursor polymer and a refractory solid filler is applied to all the accessible surfaces of the preform and conversion of the precursor polymer into a ceramic in order to reduce the porosity at the surface of the perform. Accordingly, Chenier discloses the composite structure comprising the same structure and made by the same SiC materials as claimed, the same structure would also have the same characteristics of the claimed composite structure such as bulk density as recited in claim 5.

With respect to claims 6-7, Chenier discloses that the structure having the shape of each of the faces of the honeycomb SiC core with reinforced cell walls (col. 7, lines 60-67) and the coating thickness is about 1mm (col. 7, lines 1-10 and col. 9, lines 15-25).

With respect to claims 9 and 22, Chenier discloses that the finishing coating can be polished so as to have optical characteristics and be used as a mirror (col. 8, lines 20-25).

With respect to claim 10, Chenier discloses that the core and the intermediate skin layers are made of SiC (col. 8, lines 20-25).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 571-272-1546. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ling X. Xu
Examiner
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